

# nucleonica at a glance



# Overview



NUCLEONICA is a new nuclear science web portal from the European Commission's Joint Research Centre. The portal provides a customizable, integrated environment and collaboration platform for the nuclear sciences using the latest internet "Web 2.0" technology.

NUCLEONICA is aimed at professionals, academics and students working in the fields of nuclear power, health physics and

radiation protection, nuclear and radiochemistry, and astrophysics. In addition, the portal will find application in the life sciences (e.g. biology, medicine, agriculture) and the earth sciences (geology, meteorology, environmental science). It is also used as a knowledge management tool to preserve nuclear knowledge built up over many decades by creating modern web-based versions of so-called legacy computer codes.

NUCLEONICA provides "software as a service" on the web rather than through installed software, adding a greater level of stability and security and avoiding version compatibility and update problems. In addition, all NUCLEONICA's web applications are browser and operating system independent and can therefore be accessed by most web browsers. The NUCLEONICA portal can also be accessed by a variety of mobile devices.

# Main Features

www.nucleonica.net

## ☑ Data Centre

Online interactive nuclide charts (based on decay modes, half-lives, binding energy, spin, parity, etc.), “Build your own” nuclide charts, reference data (datasheets, derived data, cross sections, spectral data, fission yields) and searchable databases for internationally evaluated nuclear data (JEFF, ENDF, JENDL, BROND, CENDL, ICRP, Table of Isotopes, EGAF, ADR, etc.)

## ☑ Application Centre

The application modules include radioactive decay, dosimetry & shielding, fission yields, range & stopping power, reactor irradiation and nuclide depletion (with webKORIGEN), transport and packaging, library creation for spectroscopy, nuclide mixtures etc., with publication quality graphics. In addition, an advanced scripting language is available for user defined calculations and batch processing.

## ☑ Knowledge Centre

Extensive use is made of “wiki” technology in the NUCLEONICA knowledge centre for online Help, Articles, Weblinks, Forum, etc. The ease of operation makes the NucleonicaWiki an effective tool for adding/changing content – this allows the portal to grow organically and provide a powerful nuclear science collaboration platform for its users. The nuclear news aggregation services, based on XML and RSS feeds using JRC web-crawler technology, provides latest news and information on nuclear issues.

## ☑ Personalised Desktop

NUCLEONICA keeps track of recent user activities and preferences by “remembering” and storing these in a Personalized Desktop



# The Innovation

1



v2 The NUCLEONICA portal (username and password access)

2



3



3 The NUCLEONICA training courses and e-learning

4 The NUCLEONICA wiki: (www.nucleonica.net:81/wiki/index.php/Special:Allpages/Help/)

# Key Advantages

[www.nucleonica.net](http://www.nucleonica.net)

☑ **Manage all your data in a single browser-based system**

The web applications are browser and operating system independent and can be accessed with Internet Explorer, Mozilla-based browsers (Mozilla, Firefox, Netscape) and a variety of other browsers such as Opera, Safari, etc. The NUCLEONICA portal can also be accessed by a variety of mobile devices.

☑ **Don't waste time writing and testing programs**

NUCLEONICA provides you with user-friendly, reliable, and fast modules (for decay, dosimetry & shielding, range and stopping power, transport and packaging, reactor irradiation calculations, etc.)

☑ **Keep track of your recent activities**

NUCLEONICA will “remember” your recent activities and preferences and store these in a Personalized Desktop.

☑ **Improve the quality of your work**

Avoid the tedious task of searching for nuclear data. NUCLEONICA uses the most recently evaluated nuclear data from international datafiles (JEFF3.1, 8th Table of the Isotopes, ICRP72, etc.).

☑ **Publication quality scientific graphs**

at any time from any location. NUCLEONICA web driven graphics package is easy to use and delivers publication quality graphs in a variety of formats (GIF, JPG, EMF, etc.).

☑ **Keep informed on nuclear developments**

NUCLEONICA web crawlers scan hundreds of websites every few minutes to bring you the latest nuclear news.

☑ **Provides the opportunity to introduce and share your expertise**

with the NucleonicaWiki – a collaborative authoring tool in nuclear science

☑ **Need to prepare a lecture or a training course?**

NUCLEONICA is an ideal source of information, articles, weblinks, graphics, tables etc. Nucleonica will assist you in preparing training courses by providing an e-learning platform for education and training in the nuclear sciences.

# Licenses

## Free Access to the NUCLEONICA Portal

From the homepage [www.nucleonica.net](http://www.nucleonica.net) every new user has to first register (with valid email) to open a free account from which he has the possibility of upgrading to the calculation and service modules. With this Free Access, a part of the NUCLEONICA web portal is freely available to all users. This allows the user access to the basic nuclear data. Another advantage is that it allows the user to get a feeling for the web portal and “see” all the modules on offer on the main (portal) page.

Following registration, an email is sent to the user to acknowledge registration details and to provide username and password to access the NUCLEONICA portal.

## Upgrading to a standard package (subscription based)

With the login information – username and password – the user can upgrade to one of the three standard packages on offer. These packages are available to the user on a yearly subscription basis starting with a “Basic” package at €245 per year. Upgrading to one of the standard packages (Basic, Premium or Platinum) is via the “Upgrade your account now!” button/link on the main (portal) page. In the upgrade/purchase page, the user can select the module(s) (though one of the three standard packages on offer). The different modules are grouped into packages as shown in the table. In addition to the free access package and the three subscription-based standard packages, there is an package for existing Nuclides.net users who would like to upgrade from Nuclides.net to NUCLEONICA. Multiple / Institute licenses are also available.

NUCLEONICA packages				
Free access*	Nuclides.net users	Basic	Premium	Platinum
free	free	245€/year	price on application	price on application

\* nuclear data only



Radioactive decay of 1 g of polonium 218 after 80 minutes:

a) nuclide selection via the Nuclide Explorer

b) use of the Decay Engine to calculate the amounts of the parent and daughters,

c) plot of the results via the Graphics Engine



The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

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